

Factors Influencing the Customer (Students) Value of E-Learning Systems: A Case of the University of Kwa-Zulu Natal

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Education enables several social aspects such as public health, economic growth, sustainable development and poverty reduction more specifically in today's knowledge society. There is a need for rapid changes in physical, digital and biological technologies and how people work and live to maintain economic competitiveness and social development. For universities to be able to keep up and adapt to the changes in technology, their e-learning systems should be in order. Information and communication technologies are said to be one of the pathways that have gained currency over the past two decades. This study's main focus was on understanding the factors which influence customer value on e-learning systems. The study was based at the University of Kwa-Zulu Natal where a quantitative study was conducted through a questionnaire being distributed to students. A hypothesised model was used in understanding the factors that could contribute to the customer value of e-learning. The results revealed that what students view as most important to them which is more valuable was the service delivery quality, Information Technology (IT) infrastructure services and perceived usefulness. This led to the researcher proposing through recommendations that if universities want to improve customer value they have to focus mainly on service delivery quality, IT infrastructure services and perceived usefulness as these were viewed as adding more value to students.

Key words: *E-Learning, Customer Value, Service Delivery Quality, Perceived Usefulness, IT Infrastructure.*

Introduction

Post 1994 the South African Government drafted education policies to promote access to educational opportunities, especially for the previously disadvantaged people. The South African Government views information communication technology (ICT) as a priority in teaching and learning. This is seen in the policy on e-Education, which states: “Every South African manager, teacher and learner in the general and further education and training bands will be ICT capable (that is, use ICTs confidently and creatively to help develop the skills and knowledge they need as lifelong learners to achieve personal goals and to be full participants in the global community) by 2013” (Department of Education South Africa, 2004: p. 17). Education has been transformed and it has been a priority to ensure that there is equality in education among all races (Dumbrajs et al., 2013). Using ICT in enhancing the quality and quantity of education has become a very important part of education related projects (Karunaratne, Peiris and Hansson, 2018). Web-based learning technologies have affected learning environments and the online environment is seen to have matched, and in some instances possibly exceeded, face-to-face-based learning (Czerkawski and Lyman III, 2016). There is, however, a possibility of students being at risk of obtaining poor academic results in an online environment. The use of e-learning will assist universities to remain competitive in teaching and learning and possibly lead to universities being able to attract new learners, as the quality of their activities will improve (Bagarukayo and Kalema, 2015).

Problem statement

The South African higher education institutions are under immense pressure to increase the participation of a different group of students to produce the skills that are required in a rapidly changing labour market (Jaffer, Ng’ambi and Czerniewicz, 2007). There is a social demand for improved access to higher education and e-learning systems have become critical as competition in higher education institutions (HEIs) is increasing with most institutions needing to reduce costs while attracting more students (El-Masri and Tarhini, 2017). The University of Pretoria (UP) was the first of South Africa’s universities to introduce e-learning in 1998 (Bagarukayo and Kalema, 2015). Other South African universities followed and the University of KwaZulu-Natal (UKZN) introduced a Learning Management System (LMS), MOODLE, in 2010. The introduction of e-learning brought numerous challenges for South African HEIs. Simelane (2011) added that these challenges are not only limited to South African HEIs but HEIs throughout the world. The challenges faced by South African HEIs include, but are not limited to, inadequate technical support and curriculum design, infrastructural constraints, limited resources, no institutional support, academic ability, low computer and internet access and a lack of ICT skills (Msomi, 2016). These challenges are no different from those found in other developing countries. Karunaratne, Peiris and Hansson (2018) confirmed that as much as ICT is used as a solution to enhance education, it has not always been successful because of many reasons including lack of funds, skills and motivation of stakeholders.

According to Hadullo, Oboko and Omwenga (2018), recent studies have shown that through the integration of ICT in education as an introduction to e-learning, numerous challenges associated with the quality of learning have arisen. For example, Kenya is facing quality issues related to an inadequate ICT and e-learning infrastructure, high internet costs, financial constraints, lack of technical skills, lack of course support, as well as a lack of commitment from the teaching staff. These same challenges are faced in South Africa and are threatening the success of e-learning systems' implementation. Lim et al., (2018) stated that there is a lack of research on digital learning in developing countries.

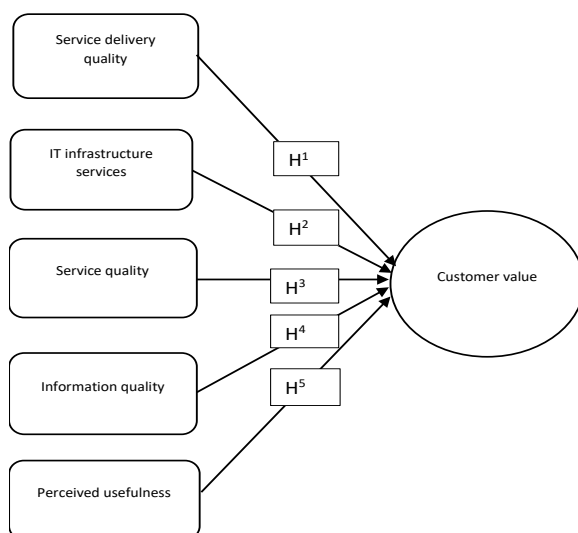
Purpose of the study

E-learning is viewed as the future of education and vast sums of money have been invested in e-learning systems to ensure that they are a success. According to Georgina and Olson (2008), e-learning systems' successful implementation is essential to universities because of the finances that have been invested in them. The main objective of the study is to understand which factors influence the customer value of e-learning systems at UKZN. This study is based at UKZN where students were the main focus. The reason for students being the main focus is because they are the main customers of the university.

Research hypotheses

This study was conducted to investigate the factors which influence customer value on e-learning systems at UKZN. To investigate the factors a hypothesised model was constructed and it includes variables that were identified through secondary sources such as literature. These variables are illustrated in the hypothesised model as follows:

Figure 1: Proposed hypothesised model – The predetermined variables that influence customer value.



Source: Adopted from Al-Sabawy, (2013)

Based on Figure 1 hypotheses have been formulated to test the relationships which are illustrated. The hypotheses are defined as follows:

- H¹: There is a positive relationship between service delivery quality and customer value.
- H²: There is a positive relationship between infrastructure services and customer value.
- H³: There is a positive relationship between system quality and customer value.
- H⁴: There is a positive relationship between information quality and customer value.
- H⁵: There is a positive relationship between perceived usefulness and customer value.

Literature review

The literature was reviewed to get an understanding of what research has been gathered on the different dependent and independent variables.

Customer value

Leroi-Werelds et al., (2014) define customer value as when the customers base their assessment of the products or services rendered on their opinions of what was offered compared to what they received. The value of services or products is determined by the customer and not the supplier. There are a limited number of characteristics upon which customers base their perception of the value of products and services, namely financial resources, knowledge, needs and desires, and previous experience (Leroi-Werelds, 2014).

Service delivery quality

Service quality, as defined by Nejadjavad and Gilaninia (2016), is a means of measuring how customers' needs and expectations are met through service. The difference between clients' expectations of service and the actual service received can be used as a definition of service quality. Service quality has an important role in adopting e-learning (Wong and Huang, 2011). There is a positive relationship between acceptance and using e-learning technology together with e-learning systems service quality. System success is affected by service quality. According to Nejadjavad and Gilaninia (2016), to satisfy the client, it is important to understand the service quality dimensions and the expectations and perceptions of the clients concerning each dimension. Good quality service makes it easier to achieve behavioural objectives that are related to the future and for the desired effects to be justified. Numerous service quality conceptual models are used by researchers. Nejadjavad and Gilaninia (2016) highlighted one of the most popular models, which was proposed by Gronroos and is used in Europe. This model consists of three main dimensions, namely functional quality, technical quality and mental image. The model includes five service quality dimensions, namely reliability, assurance, tangibles, empathy and responsiveness.

IT infrastructure services

Chanopas, Krairit and Ba Khang (2006) hold that the term information technology (IT) became popular in the 1990s and it has been defined as shared IT resources that are the foundation of organisational communication and implementation of business functions. IT infrastructure is the most important component in computer technology, basic data systems and communication within the technological framework (Jabbouri, Siron, Zahari, and Khalid, 2016). According to Shibambu and Ditsa (2017), IT infrastructure has become a vital tool for daily operations in most organisations, as they seek to decrease costs while still improving the quality of the services that they offer. Akbar et al., (2015) stated that with IT infrastructure there is a creation of firm value, where the firm has an opportunity to share information both internally and externally. Shibambu and Ditsa (2017) indicated that IT infrastructure is made up of compatibility, IT personnel, connectivity, IT management and modularity.

System quality

The quality of the systems is about how the users perceive the performance of the system. Quality can be used as an evaluation tool in e-learning where excellence is evaluated. It is therefore important that there should be a set of standards for e-learning quality (Hadullo, Oboko and Omwenga, 2018). With e-learning, the quality of the system is measured using both the hardware and software applications (Freeze, 2010). According to Bharati and Chaudhury (2015), system quality is how the individual perceives the overall performance of the system; considering the ease of use, the flexibility and reliability of the system as well as the convenience of accessing the system. Al-Samarraie, Teng, Alzahrani and Alalwan, (2017) posit that the information system success model uses operational characteristics such as user interface consistency, reliability, the response rate in interactive systems, and document quality to measure system quality. This is in line with the views of Sarrab et al., (2015) as they indicated that there are a limited number of system quality characteristics and these are usability, performance, functionality, availability and dependability.

Information quality

When people select information, they ensure that the information that they select is of good quality and that it is the best information available to fulfil their needs (Mai, 2013). Al-Debei (2014) stated that information quality at higher education institutions is about the quality of the outputs and includes, but is not limited to, information on courses, publications, seminars, research events and academic programs. Mai (2013) alluded that one of the challenges is gaining an understanding of what exactly makes that information the best information in terms of availability when it comes to exploring the nature of information quality. There are numerous characteristics of information quality, namely completeness, timeliness, currency, comparability, significance, relevance, accurateness, consistency, conciseness, precision, ease of understanding and format (Freeze, 2010). Al-Samarraie et al., (2017) agree with the opinion

that accuracy, timeliness, completeness, relevance and consistency of the information provided by an information system are the information quality measures for semantic success. Completeness is the ability of the system to be able to provide the necessary information; currency is the system information being up-to-date; accuracy is how precise and correct the information that is provided on the system is; and format is the presentation of the information and the navigation within the system (Al-Debei, 2014). Al-Debei (2014) alluded that perceived usefulness is affected by information quality. Mai (2013) shared the same sentiments, as the writer mentioned that information that has high quality possesses the characteristics of being relevant, up-to-date, understandable to the user, on time and economic for the purpose at hand.

Perceived usefulness

The acceptance of technology is affected by two main beliefs, which are the perceived usefulness and perceived ease of use of the product (Al-Debei, 2014). Tarhini et al., (2017) hold that the perceived ease of use predicts the perceived usefulness and system usage. The ease of use influences the perceived usefulness. Mohammadi (2015) alluded that a person's willingness to use an information system relies mostly on that person's perception of the use of the system. According to Ezzi (2014) one of the key factors that contribute to the acceptance of information systems is the perceived usefulness of the system. If the information system is perceived as being useful, there is more likelihood that the level of use of the system will be high. Al-Samarraie et al., (2017) added that utility value acts as the predictor of users' satisfaction and it plays a role in the users' continued intention to engage in e-learning. Utility value implies the degree of assistance provided by e-learning when applied to tasks. According to Al-Samarraie et al., (2017) higher education institutions should improve and enhance utility value, information quality and task technology fit, as these aspects of e-learning systems are the drivers of usefulness and will be beneficial in improving users' perceptions of the usefulness of the system.

Methodology

The researcher used the survey method using a self-completion questionnaire for the study, as there were a large population and sample. The total number of participants for this study was drawn from the number of students who are registered at UKZN, approximately 30 000. The researcher made use of probability sampling when conducting the quantitative data collection, where the whole population was included in the sample. The sample size was the whole population of students, as the researcher used the online survey system (web-based survey named question pro) where the questionnaire link was sent to everyone using the UKZN notice system. 501 responses were received from students but only 497 were usable. In analysing data, the data collected was entered into an excel spreadsheet and exported to Statistica.

To measure validity the researcher used exploratory factor analysis (EFA). According to DeCoster (1998), EFA is used when one wishes to: understand the sets of items that can be

grouped in the questionnaire; generate the factor scores that represent the underlying constructs for use in other analyses; determine which are the important factors when classifying a group of items; demonstrate the dimensionality of the measurement scale; and identify what the nature of the constructs in underlying responses in a specific area is. The researcher used EFA to ensure that the understanding of the constructs was consistent with the nature and meaning of the constructs. To measure reliability the researcher made use of Cronbach's alpha which is a tool used in measuring internal consistency as to how close the set of items are to the group. Multiple regression was used in the study to investigate what effects the independent variables have on a single dependent variable (Zikmund et al., 2010).

Findings

Quantitative data was collected from students at UKZN with the aim of understanding which factors influence customer value on e-learning systems at UKZN. Below are the findings.

The largest number of students that responded was female represented by 56.63% as opposed to male student participants 43.97%. Most participants were black students 75.76%, followed by 16.77% Indian students, 5.05% coloured students and lastly 2.42% white students. The majority, 86.59% of the student participants were between the ages of 18 and 25, with 9.15% between the ages of 26 and 35. This indicates that the majority of the student participants were young adults. A large percentage 62.73% was undergraduate students with only a matric qualification. 19.84% of the students were postgraduate students with a degree.

Table 1: Customer Value (CV)

CV	Category	SA	A	N	D	SD
CV1	I believe that with MOODLE I have received value for money.	16.46	39.63	27.64	10.59	5.69
CV2	MOODLE has assisted me to gain an understanding of concepts and principles in my study area that I do not believe I would have gained without MOODLE.	21.41	39.19	25.45	8.08	5.85
CV3	Overall, MOODLE is simplifying my life.	29.41	44.01	18.05	4.25	4.25
CV	Mean/Average %	22.42	40.94	23.71	7.64	5.26

Students had to respond to questions on the value MOODLE adds for them as stakeholders in the university. The response was reasonably positive, as over 60% of the students responded positively. On the one hand the statement "Overall, MOODLE is simplifying my life" stood out, as approximately 70% of the students agreed with the statement. There was however a negative response to customer value, as over 30% of the students were neutral, disagreed and

strongly disagreed. The main statements about which most students were neutral included “I believe that with MOODLE I have received value for money” and “MOODLE has assisted me to gain an understanding of concepts and principles in my study area that I do not believe I would have gained without MOODLE”.

Table 2: Service Delivery Quality (SDQ)

SDQ	Category	SA	A	N	D	SD
SDQ1	I find MOODLE easy to navigate	34.41	43.92	13.76	5.46	2.43
SDQ2	I am able to complete tasks quickly with MOODLE	30.91	42.42	17.37	7.07	2.22
SDQ3	MOODLE is well organised	33.73	40.61	13.73	8.89	3.03
SDQ4	MOODLE loads its pages fast	23.17	37.80	22.96	12.39	3.66
SDQ5	MOODLE is always available when I have to complete and perform learning activities	23.69	44.57	16.26	12.05	3.41
SDQ6	MOODLE does not crash frequently	25.20	41.26	22.36	7.72	3.45
SDQ7	MOODLE makes lectures, materials and feedback available within a suitable time frame	21.50	48.88	16.83	10.14	2.63
SDQ8	With MOODLE I get feedback about my queries quickly	16.05	33.53	33.94	12.39	4.07
SDQ9	I feel my information as a student is protected on MOODLE	20.81	39.79	25.65	10.50	3.23
SDQ10	MOODLE is convenient for me to change curriculum	16.26	35.64	31.36	10.59	6.11
SDQ11	MOODLE allows me to engage in online discussions with other students	16.63	35.94	35.94	11.76	4.66
SDQ12	MOODLE allows me to discuss issues with my lecturers	16.63	35.94	35.94	11.76	4.66
SDQ13	MOODLE assists me with administrative challenges such as unmarked assignments and way forward	13.72	31.97	32.99	13.11	8.19
SDQ	Mean/Average %	22.54	39.13	24.28	10.36	4.05

The majority of the students rated service delivery quality highly, as they agreed and strongly agreed with most statements. What was most attractive to students concerning system delivery quality was reflected in the following statements “I find MOODLE easy to navigate”, “I am able to complete tasks quickly with MOODLE” and “MOODLE is well organised”. There were high percentages (over 70%) of students who strongly agreed and agreed. There were several

concerning statements where more than 40% of the students were neutral and in disagreement and strong disagreement and these statements were: “*MOODLE makes lectures, materials and feedback available within a suitable time frame*”, “*I feel my information as a student is protected on MOODLE*”, “*MOODLE is convenient for me to change curriculum*”, “*MOODLE allows me to engage in online discussions with other students*”, “*MOODLE allows me to discuss issues with my lecturers*”, “*MOODLE assists me with administrative challenges, such as unmarked assignments and the way forward*”.

Table 3: IT infrastructure services data presentation (IS)

IS	Category/statements	SA	A	N	D	SD
IS1	The ICS division provides me with technology, advice and support services related to the MOODLE system	29.30	43.85	18.24	5.53	3.07
IS2	The ICS division provides me with a wide range of facilities to perform MOODLE activities, such as access to the library	30.75	48.68	12.83	5.09	2.65
IS3	The ICS division enables me to receive and exchange information and knowledge with lecturers and other students by using electronic linkages and software applications	19.31	38.62	29.88	8.74	3.45
IS4	The ICS division provides me with data management advice and consultancy	31.97	43.79	15.47	5.70	3.05
IS5	The ICS division provides me with a wide range of electronic channels, such as emails, websites and calls centers to connect	25.96	49.89	15.01	5.6	3.45
IS6	The ICS division provided me with MOODLE service with a high level of technical security	30.83	46.04	16.63	3.24	3.24

Data collected from students revealed information on how students feel about the IT infrastructure at UZKN. Overall, the results were positive, as most students 45.14% agreed that the IT infrastructure is in place. The question that attracted the strongest agreement about the IT infrastructure was “*The ICS division provides me with a wide range of facilities to perform MOODLE activities, such as access to the library*”, where 79% of the students agreed and strongly agreed with the statement. However, 147 students were neutral in answer to the statement “*ICS division enables me to receive and exchange information and knowledge with lecturers and other students by using electronic linkages and software applications*” with only 60 students disagreeing with the statement.

Table 4: System Quality (SQ)

SQ	Category	SA	A	N	D	SD
SQ1	I find the MOODLE system easy to use	52.52	33.13	7.88	3.03	3.43
SQ2	I find the MOODLE system easy to learn	49.09	34.34	9.89	3.83	2.83
SQ3	The data in the MOODLE system is integrated and consistent	32.12	41.01	17.98	5.85	3.03
SQ4	The MOODLE system always does what it should	29.06	38.41	21.14	8.94	2.43
SQ5	The MOODLE system requires only the minimum number of fields and screens to achieve a task	22.15	41.46	26.42	7.72	2.23
SQ6	The MOODLE system meets my requirements	30.95	43.99	15.07	6.51	3.46
SQ7	The MOODLE system includes all the necessary features and functions for my study	31.92	39.79	16.36	8.08	3.83
SQ	Mean/Average %	35.40	38.88	16.40	6.28	3.03

The test of system quality revealed positive results and most students agreed that the system is of good quality. One of the main reasons identified from the results that led to this conclusion of system quality is that most students responded positively to “*I find the MOODLE system easy to use and I find the MOODLE system easy to learn*”. Over 80% of the students responded positively to these questions. However, over 30% of the students answered between neutral and strong disagreement with the following two statements “*The MOODLE system always does what it should*” and “*The MOODLE system requires only the minimum number of fields and screens to achieve a task*”. This should not be taken lightly as it indicates that there is a group of students who are not satisfied with the system quality.

Table 5: Information Quality (IQ)

IQ	Category	SA	A	N	D	SD
IQ1	The MOODLE systems provide me with the outputs I need	24.94	49.49	16.83	5.47	3.24
IQ2	The information from the MOODLE system is easy to understand	40.77	41.78	11.97	4.05	1.42
IQ3	The information I need from the MOODLE system is always available to me	30.08	39.22	15.85	13.01	1.82
IQ4	Information from the MOODLE system is in a form that is readily usable	33.67	46.53	12.65	4.89	2.24
IQ5	The information on the MOODLE system is concise	26.48	45.79	19.92	6.16	1.64
IQ	Mean/Average %	31.19	44.56	15.44	6.72	9.05

The information quality of the MOODLE system was rated as high by students as an average of 75% of the students agreed. The statements that were rated highly by the students were “*The information from the MOODLE system is easy to understand*” and “*The information I need from the MOODLE system is always available to me*”. Numerous students did not concur with the statement that “*The information I need from the MOODLE system is always available to me*”, as 151 students answered neither agree/nor disagree and strongly disagree.

Table 6: Perceived Usefulness (PU)

PU	Category	SA	A	N	D	SD
PU1	Using the MOODLE system makes it easier for me to do my studies	35.03	44.60	11.81	6.11	2.44
PU2	MOODLE improves my study performance	24.95	41.85	22.88	7.01	3.29
PU3	The MOODLE system is useful to me in my studies	31.27	47.94	12.34	5.14	3.29
PU4	MOODLE helps me to accomplish my tasks more quickly	27.22	42.68	20.62	6.59	2.88
PU	Mean/Average %	29.61	44.26	16.91	6.21	2.98

The perceived usefulness of MOODLE by students was more favourable with the statements “*Using the MOODLE system makes it easier for me to do my studies*” and “*The MOODLE systems is useful to me in my studies*”, where over 70% of the students were between strongly agree and agree with the statements. The only two worrying statements to which attention needs to be paid are “*MOODLE improves my study performance*” and “*MOODLE makes me*

accomplish my tasks more quickly”, as approximately 30% of the students were not in agreement with these statements, including students who were neutral about the statements.

The measure of validity and reliability - students

Validity was tested using EFA, which is a statistical tool that was used to uncover the underlying structure of a relatively large set of variables. This measure resulted in the rotated factor matrix presented in Table 7.

Table 7: Rotated factor matrix - students

Variable	Factor Loadings (Varimax raw) (Copy of Data) Extraction: Principal components (Marked loadings are > 0.400000)						
	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7
SDQa SDQ5	0.715281	0.200046	0.109995	0.165292	0.228610	0.214489	0.197605
SDQ6	0.679202	0.196648	0.103524	0.266791	0.222634	0.069818	0.080224
SDQ4	0.644673	0.130236	0.068430	0.088600	0.268168	0.291694	0.117276
SDQ3	0.597226	0.069510	0.030503	0.245133	0.378058	0.358021	0.078249
SDQ7	0.594587	0.360391	0.154636	0.213148	0.236777	0.036940	0.087241
SDQ2	0.563678	0.034489	0.074393	0.260281	0.366015	0.330138	0.055788
SDQb SDQ12	-0.008521	0.778501	0.127193	0.234161	0.147422	0.197274	0.075856
SDQ13	0.017213	0.777098	0.125490	0.169362	0.082774	0.198113	0.111365
SDQ11	0.076246	0.776079	0.082716	0.153975	0.129975	0.155985	0.068013
SDQ10	0.330141	0.714519	0.143510	0.121705	0.017199	-0.028080	0.083329
IS2	0.043693	0.042527	0.785401	0.100684	0.151167	0.177518	0.181086
IS3	0.074392	0.144971	0.752666	0.131667	0.131389	0.237861	-0.022928
IS1	0.015186	0.075249	0.740649	0.096792	0.135043	0.189263	0.171450
IS4	0.028369	0.253397	0.733111	-0.047360	0.076001	0.067178	0.162501
IS5	0.144025	0.089525	0.698608	0.217925	0.255198	0.033471	-0.100283
IS6	0.232206	0.141096	0.636241	0.178125	0.338402	-0.019434	-0.003621
PU1	0.127888	0.268110	0.115400	0.768569	0.224552	0.135411	0.101282
PU3	0.231282	0.144166	0.104170	0.766640	0.248531	0.188801	0.130971
PU2	0.165571	0.308141	0.130790	0.728069	0.172204	0.154927	0.184631

Variable	Factor Loadings (Varimax raw) (Copy of Data) Extraction: Principal components (Marked loadings are > 0.400000)						
	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7
PU4	0.162866	0.234886	0.066031	0.715776	0.231934	0.165594	0.246689
SQ2	0.206414	-0.017619	0.165456	0.358326	0.751629	0.135456	0.030031
SQ1	0.191998	-0.051774	0.203378	0.337036	0.742367	0.125561	0.052676
SQ3	0.158429	0.220112	0.184366	0.082889	0.739170	0.146305	0.120675
SQ6	0.249480	0.171814	0.116948	0.241463	0.725958	0.155328	0.174820
SQ4	0.213087	0.203750	0.159618	0.098340	0.721504	0.243930	0.110475
SQ5	0.062012	0.242335	0.181792	0.064624	0.679755	0.130651	0.150250
SQ7	0.267518	0.218350	0.142503	0.216620	0.601467	0.144245	0.103680
IQ1	0.255673	0.217077	0.213823	0.267318	0.520048	0.275847	0.138572
IQ4	0.236715	0.130773	0.210812	0.288881	0.264246	0.723976	0.084735
IQ3	0.172473	0.325311	0.219225	0.093199	0.193561	0.667594	0.210183
IQ2	0.166491	0.096389	0.270829	0.345529	0.309821	0.619650	0.092297
IQ5	0.289844	0.292912	0.212640	0.202392	0.291709	0.606527	0.078778
CV1	0.188585	0.222545	0.092510	0.175907	0.198324	0.132235	0.685994
CV2	0.079950	0.172683	0.101050	0.383089	0.186953	0.081699	0.658502
Expl.Var	4.174837	4.252406	3.972466	4.506640	5.677507	2.922793	2.529035
Prp.Totl	0.101825	0.103717	0.096889	0.109918	0.138476	0.071288	0.061684

Cronbach's alpha was used to test the internal consistency and reliability of each of the factors reported in Table 7. Cronbach's alpha is a tool that is used to measure internal consistency to indicate how closely related the items in a group are. Pallant (2011) indicated that having a Cronbach's alpha value of 0.7 or higher implies that there is an acceptable level of internal consistency and reliability. Pallant also holds that it is common to find Cronbach's alpha values below 0.7, where the variables consist of items that are less than 10. This has led to accepting Cronbach's alpha coefficients from 0.6. This measure was performed to ascertain reliability. The results are revealed in Table 8.

Table 8: Cronbach’s alpha measure of reliability results - students

Variable	Cronbach’s Alpha
CV	0.66267
SDQ	0.86297
IS	0.87495
SQ	0.92216
IQ	0.87098
PU	0.90119

According to Gliem and Gliem (2003), if the Cronbach’s alpha coefficient is closer to 1.0, it means there is greater internal consistency of the items in the scale. The students’ results revealed a Cronbach’s alpha that is closer to 1.0, meaning that there is greater consistency of the items in the scale.

Multiple regression analysis (students)

Multiple regression analysis was conducted to determine which of the independent variables predicts customer value, which is a dependent variable. Multiple regression analysis was suitable for this study as it allowed for a simultaneous investigation to determine how well a set of variables can predict a certain outcome. Multiple regression analysis results are as follows: customer value is the dependent variable. Three variables revealed positive influences on the dependent variable. This is represented in Figure 2 below.

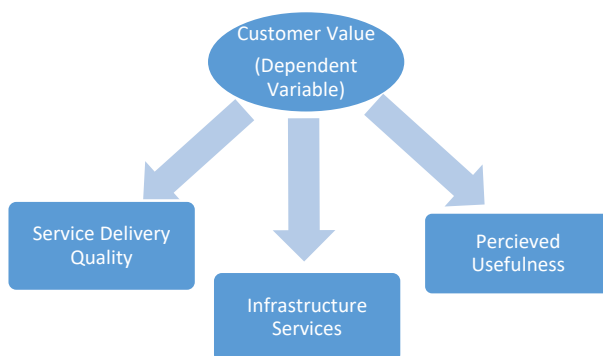


Figure 2: Regression Summary for Dependent Variable Customer Value

Figure 2 indicates that customer value is dependent on three variables, namely service delivery quality, infrastructure services and perceived usefulness.

Discussion

Customer Value: More than 60% of the students were satisfied with MOODLE, with the highest level of satisfaction being expressed for the statement “*Overall, MOODLE is simplifying my life*”. Weinstein and McFarlane (2017) mentioned that for customers’ needs to be met, service providers must go the extra mile and deliver more than just enough to meet the customers’ basic needs.

Service Delivery Quality: According to Nejadjavad and Gilaninia (2016), service delivery quality is a measure of how customers’ needs for services are met by the services that are provided. The study revealed that overall the students were satisfied with the service delivery quality of MOODLE, as there was an agreement level of over 60%. There were however concerns, as several students, approximately 20%, were neutral about service delivery quality. This should be noted because students are the most important stakeholders for ensuring that e-learning becomes a success and their views should be heard and taken seriously.

Infrastructure services: The results about infrastructure services from students revealed that students were positive about issues related to infrastructure services. This positive result will work to the institution's advantage, as information technology infrastructure is important for a basic data system and communication within the technological framework (Jabbouri et al., 2016). Shibambu and Ditsa (2017) hold that IT infrastructure has become a vital tool in daily operations. When testing IT infrastructure, there were four critical components (Weill and Vitale, 2002). These components were: shares and standard application; shared IT services; human IT infrastructure; and IT components (Weill and Vitale, 2002). These were tested in the survey where participants had to answer questions relating to the components. One of the main concerns of students that were revealed by the empirical qualitative and quantitative study was the security of their information on MOODLE. According to Durairaj and Manimaran (2015), challenges relating to technical security issues are problematic and lead to constraints when using technology. Bose and Sarddar (2017) emphasised the importance of ensuring the smooth and secure integration of students’ requirements and the protection of the material.

System quality: When testing system quality, the main objective was to understand and measure the system quality characteristics advanced by Sarrab et al., (2015) namely: usability, performance, functionality, availability and dependability. The following statements match the characteristics for measuring system quality. Usability: “I find the MOODLE system easy to use” and “I find the MOODLE system easy to learn”. Performance: “The MOODLE system always does what it should” and “The MOODLE system requires the minimum number of fields and screens to achieve a task”. Functionality: “The MOODLE system includes all the necessary features and functions”. Availability: “The MOODLE system meets my requirements”. Dependability: “The MOODLE system always does what it should”. System quality was highly rated by most students who participated.

Information quality: When selecting information people generally make sure that they select the information that is of good quality (Mai, 2013). During the study, it was noted that students responded positively to questions on information quality and agreed that the system is of high quality.

Perceived Usefulness: Al-Debei (2014) and Tarhini et al. (2017) emphasised that perceived ease of use is related to the perceived usefulness and system usage. The implication is that for users to utilise the system, the system must be easy to use. The data that were collected from students revealed that most of the participants were positive about the perceived usefulness of the system with a higher than 50% level of agreement. More than 15% of the participants felt differently and were not positive about the perceived usefulness. According to Al-Samarraie et al., (2017) this necessitates that higher education institutions must improve and enhance the utility value (helpful e-learning tasks) and information quality, as this will increase the users' perceptions of the usefulness of the system.

Multiple regression was conducted using the student's results. Gravetter and Forzano (2012) highlighted that multiple regression analysis is a statistical process that is used to find the most accurate prediction equations. The results revealed that value is a dependent variable. The students' results revealed that value is dependent on service delivery quality, perceived usefulness and infrastructure services. The students' results indicate that if the university wishes to achieve customer value, they should improve the service delivery quality, IT infrastructure services and perceived usefulness.

Table 9: Summary of the acceptance of the hypotheses based on the multiple regression analyses results

Hypothesis number	Hypotheses	Comment
H ¹	There is a positive relationship between service delivery quality and customer value.	Accepted
H ²	There is a positive relationship between IT infrastructure services and customer value.	Accepted
H ³	There is a positive relationship between system quality and customer value.	Rejected
H ⁴	There is a positive relationship between information quality and customer value.	Rejected
H ⁵	There is a positive relationship between perceived usefulness and customer value.	Accepted

It is evident that only three out of five variables have a positive relationship with customer's value and these are: service delivery quality, infrastructure services and perceived usefulness.

Conclusion

The study revealed from the different variables what is more beneficial to UKZN students as customers of the university. All variables were important but there are however three variables that were identified by students as adding more value to them as customers. These variables include service delivery quality, IT infrastructure services and perceived usefulness. With e-learning systems what students value the most is the ease of use, efficiency, wide range of facilities, technical security and relevance.

Recommendations

- The responses from the students' questionnaire in the empirical study revealed that customer value is a variable that is dependent on service delivery quality, IT infrastructure services and perceived usefulness. This means that the HEIs should focus on improving the IT infrastructure, perceived usefulness and the level of service delivery quality if they wish to increase value for their customers.
- In improving these variables the main focus should be on the ease of use in terms of navigation of the system being easy, efficient, offering a wide range of facilities, technical security and usefulness as these were the highlights of student's value in the study.
- The HEIs need to understand that the most powerful way to grow is by delivering value to their consumers and they can only do that if they understand what their consumers value the most.

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